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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,003	12/03/2003	Juanita M. Cassidy	2002-IP-008502U1	4501
71/407 ROBERT A. KENT P.O. BOX 1431 DUNCAN, OK 73536	7590 01/21/2009		EXAMINER CONLEY, SEAN EVERETT	
			ART UNIT 1797	PAPER NUMBER
			NOTIFICATION DATE 01/21/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/727,003

Applicant(s)

CASSIDY ET AL.

Examiner

SEAN E. CONLEY

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 25-32 is/are pending in the application.
4a) Of the above claim(s) 12 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-11 and 25-32 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/S5108)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed October 20, 2008 has been received and considered for examination. Claims 1-12 and 25-32 are pending with claim 12 remaining withdrawn from consideration for being directed to a non-elected species.

Claim Rejections - 35 USC § 102/103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 3-11, and 25-32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Walker (U.S. Patent No. 5,366,643).

With respect to claims 1 and 32, Walker discloses a method of inhibiting corrosion of a metal surface contacted by an aqueous acid solution comprising: combining a corrosion inhibiting composition with the aqueous acid solution and contacting the metal surface, such as a metal surface in a subterranean formation, with the aqueous acid solution containing the corrosion inhibiting composition (see col. 1, lines 15-20). The corrosion inhibiting composition comprises the reaction product of an alpha, beta-unsaturated aldehyde with a primary or secondary amine (see col. 2, lines 30-67; see examples I-IV). Walker further discloses that the materials used to form the

reaction product may be added in any order to the reaction vessel (see col. 9, lines 10-23). Therefore, the alpha, beta-unsaturated aldehyde and the primary or secondary amine may be added first thus reacting to form an imine. In the event that a reaction product comprising an imine has not been shown with sufficient specificity in the disclosure of Walker, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a reaction product by first adding the aldehyde and ethanolamine disclosed by Walker (see example I) to the reaction vessel first, thus forming an imine, prior to adding the rest of the materials as shown in example I, since Walker discloses that the materials may be added in any order to the reaction vessel.

With respect to claim 3, Walker discloses that the metal surface comprises N-80 steel (see examples I-IV).

With respect to claim 4, Walker discloses that the alpha, beta-unsaturated aldehyde comprises cinnamaldehyde (see col. 5, lines 57-66).

With respect to claim 5, Walker discloses that the primary or secondary amine comprises ethanolamine (see table III).

With respect to claim 6, Walker discloses that the reaction product results from a reaction of the primary or secondary amine with the alpha,beta-unsaturated aldehyde at a molar ratio of amine to aldehyde or ketone in the range of from about 0.1:1 to about 4:1. Specifically, Walker discloses 0.3 moles of ethanolamine and 0.66 moles of an aldehyde which fall within the claimed ratio (see example I and tables I-V).

With respect to claim 7, Walker discloses that the corrosion inhibiting composition is combined with the aqueous acid solution in an amount in the range of

from about 0.01% to about 5% by weight of the aqueous acid fluid. Specifically, Walker discloses that the inhibitor composition is present in an amount from about .1 to about 20 gallons per 1000 gallons of aqueous acidic solution which falls within the claim range (see col. 8, lines 20-35).

With respect to claim 8, Walker discloses that the corrosion inhibiting composition further comprises a solvent or a surfactant (see col. 7, lines 40-60).

With respect to claims 9 and 10, Walker discloses that the aqueous acid solution is 15% hydrochloric acid. It is well known that a 15% solution of hydrochloric acid means that the solution is 15% hydrochloric acid and the remainder is water (see examples I- IV).

With respect to claims 11 and 25, Walker discloses in the examples that the metal coupon is exposed to the aqueous acid solution at temperatures of about 300°F, wherein the hydrochloric acid is at a concentration of about 15% by weight of the solution (see example I; see column 9).

With respect to claims 26-31, Walker discloses that the corrosion inhibiting composition may further comprise acetylenic alcohol (see col. 7, lines 1-24), carbonyl compounds (see col. 5, lines 10-25), and formamide (see table IV).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walker as applied to claim 1 above, and further in view of Treybig et al. (U.S. Patent No. 4,784,796).

Walker discloses the claimed invention except for the step of separately adding the aldehyde or ketone and the amine to water used to form the aqueous acid solution.

Treybig et al. disclose a process of forming a corrosion inhibitor by first reacting an alpha, beta-unsaturated aldehyde with a primary amine to form an imine (see col. 2, lines 35-47; see col. 5, lines 17-51). Treybig et al. further discloses that the amine is first dissolved in a suitable solvent in a reaction vessel. The solvent being water is mixed with the amine. Then a solution of unsaturated aldehyde is contacted with the amine solution (see col. 5, lines 3-28). This reaction results in the formation of an imine which is suitable for use as a corrosion inhibitor (see col. 5, lines 38-42).

Therefore, because both Walker and Treybig et al. teach a process for forming a corrosion inhibiting composition suitable for preventing corrosion of metals in oil well materials, it would have been obvious to one skilled in the art to substitute one process of forming the corrosion inhibiting composition for the other to achieve the predictable result of preventing corrosion of metals in oil well applications.

Response to Arguments

5. Applicant's arguments filed October 20, 2008 have been fully considered but they are not persuasive.

Regarding the Rejection of Claims 1, 3-11 and 25-32

The Applicant argues the following: "*Applicants submit that Walker fails to disclose, teach, or suggest every element as recited in claims 1 and 32 as required to*

anticipate these claims under 35 U.S.C. § 102(b) or to obviate these claims under 35 U.S.C. § 103(a). MPEP § 2131, 2142."

In particular, with respect to independent claim 1, Walker fails to disclose "contacting the metal surface with the aqueous acid solution containing the corrosion inhibiting composition" wherein the corrosion inhibiting composition comprises "a reaction product of an alpha,beta-unsaturated aldehyde or an alpha,beta-unsaturated ketone with a primary or secondary amine, the reaction product comprising a reaction product selected from the group consisting of an imine, a hemiaminal, an iminium ion, and combinations thereof." With respect to independent claim 32, Walker fails to disclose "introducing an aqueous acid solution comprising a corrosion inhibiting composition into . . . a subterranean formation, wherein the corrosion inhibiting composition comprises a reaction product of an alpha,beta-unsaturated aldehyde or an alpha,beta-unsaturated ketone with a primary or secondary amine, the reaction product comprising a reaction product selected from the group consisting of an imine, a hemiaminal, an iminium ion, and combinations thereof."

"In contrast, the corrosion inhibitor disclosed in Walker that contacts the metal surfaces or is introduced into the subterranean formation does not comprise a reaction product of an alpha,beta-unsaturated aldehyde or an alpha,beta-unsaturated ketone with a primary or secondary amine, the reaction product comprising a reaction product selected from the group consisting of an imine, a hemiaminal, an iminium ion, and combinations thereof. The corrosion inhibitor disclosed in Walker is described as follows:

"The corrosion inhibitor comprises the product of the reaction of (i) a compound having at least one reactive hydrogen atom and having no groups reactive under the conditions of reaction other than hydrogen, (ii) a carbonyl compound having at least one hydrogen atom on the carbon atom adjacent to the carbonyl group, (iii) an aldehyde, (iv) a fatty compound and an acid source which is admixed with a source of antimony ions."

Walker, Abstract. As set forth in the Abstract, the corrosion inhibiting composition disclosed in Walker is a reaction products of at least four different reactants that will form a different reaction product than required by Applicants' claims. See Walker, abstract; col. 2, line 49 - col. 3, line 4.

As such, Walker fails to disclose a reaction product that comprises an imine, a hemiaminal, an iminium ion, or combinations thereof, as required by Applicants' claims as amended.

Although the Examiner argues that Walker may disclose that the material used to form the reaction product may be added in any order to the reaction vehicle, and thus the alpha,beta-unsaturated aldehyde and the primary or secondary amine may be added first thus reacting to form an imine (See Office Action at 4.), Applicants respectfully disagree that this has been shown with sufficient specificity. Furthermore, even if the Examiner contends that this has been shown with sufficient specificity, or that it would be obvious to add these reactants in this order, Walker still fails to disclose, teach, or suggest introducing this allegedly formed imine into the subterranean formation. Rather, Walker only discloses adding the reaction product of (i) a compound having at least one reactive hydrogen atom and having no groups reactive under the

conditions of reaction other than hydrogen, (ii) a carbonyl compound having at least one hydrogen atom on the carbon atom adjacent to the carbonyl group, (iii) an aldehyde, (iv) a fatty compound and an acid source which is admixed with a source of antimony ions to the subterranean formation. Whether an imine is formed as an intermediate in this reaction is irrelevant."

"Therefore, Applicants respectfully assert that independent claims 1 and 32 and their dependent claims are not anticipated by Walker. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 1, 3-11, and 26-32."

The Examiner respectfully disagrees. Walker discloses a reaction product formed of at least four different reactants that may be mixed together in any order. Specifically, Walker discloses that two of the reactants are an alpha,beta-unsaturated aldehyde (cinnamaldehyde) and a primary or secondary amine (ethanolamine). Since the reactants may be mixed together in any order, the alpha,beta-unsaturated aldehyde (cinnamaldehyde) and a primary or secondary amine (ethanolamine) are mixed together first to form a reaction product selected from the group consisting of an imine, a hemiaminal, or an iminium ion, or any combination thereof. This arrangement has been shown with sufficient specificity and is suggested by Walker (see col. 1, lines 15-20; see col. 2, lines 30-67; see examples I-IV; see col. 9, lines 10-23).

The present claims do not require the step of introducing the formed imine into a subterranean formation as alleged by the Applicant. The claims only require that the corrosion inhibiting composition comprise a reaction product of alpha,beta-unsaturated

aldehyde and a primary or secondary amine to form a reaction product selected from the group consisting of an imine, a hemiaminal, or an iminium ion, or any combination thereof.

It is noted that the claims are method claims and the open claim language "comprising" does not prohibit additional reactants from being mixed with the reaction product formed by the mixing of the alpha,beta-unsaturated aldehyde and a primary or secondary amine. Therefore, the Applicant's argument that the *"corrosion inhibitor in Walker that contacts the metal surfaces or is introduced into the subterranean formation does not comprise a reaction product of an alpha,beta-unsaturated aldehyde or an alpha,beta-unsaturated ketone with a primary or secondary amine, the reaction product comprising a reaction product selected from the group consisting of an imine, a hemiaminal, an iminium ion, and combinations thereof"* is not commensurate in scope with the claims.

Furthermore, it is not irrelevant that the imine is formed as an intermediate in the reaction because the open claim language ("comprising") only requires a teaching of the formation of the claimed reaction product. The claims do not prohibit additional steps of adding additional reactants to form another reaction product prior to mixing the corrosion inhibiting composition with the aqueous acid solution.

As stated previously, Walker suggests a corrosion inhibiting composition comprising a reaction product selected from the group consisting of an imine, a hemiaminal, or an iminium ion, or any combination thereof before additional the reactants are added to the composition, thus meeting the claimed process limitations.

As such, claims 1, 3-11 and 25-32 remain rejected as being anticipated by, or in the alternative, obvious over Walker. See rejection above.

Regarding the Rejection of Claim 2

Applicant argues that Walker fails to disclose each and every element of claim 1 and Treybig fails to obviate the deficiencies of Walker. The Examiner respectfully disagrees for the reasons stated previously with regards to the rejection of claim 1 and the cited prior art of Walker. Claim 2 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Walker in view of Treybig et al. as indicated in the previous office action and in the above rejection.

Request for rejoinder of Claims

The rejoinder of withdrawn claim 12 will be considered if independent claim 1 is ultimately indicated as allowable.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E. Conley whose telephone number is 571-272-8414. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 14, 2008

/Sean E Conley/
Primary Examiner, Art Unit 1797